

Establishment of Learning Organisation Structure For GIS Companies

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Key Words: Learning Organisation, management, GIS

Summary

GIS application development and implementation is very complicated when organisational structure of the company is strictly hierarchical. For a GIS effort to be successful, all of these components of organisation should be carefully coordinated and integrated. There are many ways to improve organisational behaviors. One of them is establishment of learning organisation. Organisational learning for a GIS Company involves individual learning and those who make the shift traditional organisation thinking to learning organisations develop the ability to think critically, creatively and analytically. Because GIS implementation provides technological infrastructure and so organisations must improve themselves due to high competition in GIS industry. Learning issue basically can be described as a relatively permanent change in behavior. When this issue is thought for organisational structures, it has been defined as "organisational learning". In 1970a that definition has been told about discovering faults and solving them for firms. Organisational learning has four features those are acquiring information, delivering information, explication on information, and last one is organisational memory. The concept "learning organisation" for the first time has been placed in Peter Senge's "The Fifth Discipline" book in 1990 for literature in management. He defines Learning Organization as "a group of people continually enhancing their capacity to create what they want to create." Information Systems presents three processes Knowledge Acquisition, Information Distribution, and Information Interpretation. For carrying out these processes, learning organisations can be useful because of their structure has three implementation levels. The first of these levels is knowing organisation. When we think it for GIS firm, it can be thought that the firms know how they can design best GIS and manage it but their changes are occurred by external influence. The second level is understanding organisation. When we think it again for GIS firm, for designing and management of GIS they aim best solution with personal intelligence of working people of the company. The last level is thinking organization, GIS Company develops solution systems and models against the faults of current structure.

In this study we have researched about organisational structure for a GIS Company "Alfabim A.S." in Turkey. Establishment of learning organisation possibility for Alfabim have been examined by social research methods such as questionnaires, meeting with working people to exhibit the company which level on learning organisational structure.

1. INTRODUCTION

Have you ever watched when geese migrate from a place to another place? Learning lots of lessons is possible by geese those have behavior as a group. They fly as V shape on air. Scientists had some studies on flying style of geese and they have get some results by these researchs. Flying each goose when flanking form air current and give chance to atother for flying easily that's why if one goose leaves from group, it experiences difficulty for flying. Because it stands out of air current. But if it returns to group, it can continue to use power of group. V shape flying geese group by using air current of wings travel more fast 70%. The first one and flying as a leader has position at end of group when it is tired. This continues serially. By sharing leadership, they are less tired and earn acceleration. They leave duty when correct time and correct place. If necessary geese those flying in first places may warn the behind ones and this warnings are welcomed by behind ones. If a goose is wounded, 2 geese leave from group for helping it and stay with wounded goose till it recovers.

For taking advance, firstly description, explanation, experience of this story and giving sense to this story is important. [Çam, 2002]

Five sights dimension:

1. Explanation
2. To be understandable
3. Giving sense
4. Decide a way
5. Description

Thinking “geese goes to another place” as drawing a picture in the mind is description dimension. Relation of causes and result about Sensible Dynamics of geese is an explanation of visible action. For giving a depth to explanation dimension, making actions as a concept is necessary. That makes easier for understanding of action. For giving sense to immigration of geese people must have consistent teorical frame. And decide a way , taking conclusions from story and effecting the processes by these results. The last dimension “description” can be desirable as a bridge between mental processes and application.

For the managment theory, Platon and Sokrates have different sights. Platon says “ the main duty of organisation is not protecting of personal benefits, it is protecting of common benefits among people.” Sokrates says “ managers must be virtuous”.

Classical management theory covers “scientific management” by Frederick Winslow Taylor” , “management teory” by Henry Fayol and “Bureaucracy Model” by Max Webber.

Scientific management can be thought as basis of classical managenemet theory. According to Taylor, human does not like working, does not want to have responsibility and human is self-seeker. For him, people were like machines. Fayol had been focused on managers. Webber supports bureaucratic model.

Nowadays, what is the best management model for GIS firms. A GIS firm uses computer technology to integrate, manipulate and display a wide range of information to create a picture of an area's geography, environment and socioeconomic characteristics. Due to this high technological needs, learning becomes an important process in every department or process in company. Learning means high competition power and less cost for organizations in the long run.

Rivalry is the first seen topic among the companies. That has caused the management to learn and companies has become as a structure that processes the information. For the life of companies, the speed of learning should be bigger or equal with speed of change.

The organisations renew themselves, change by learning those can reach to their aims easily and have their wishes quickly.

As general reason of learning organisation necessity can be sequenced:

- To be alive for business life
- Contention with other companies
- To be leader for sector
- To meet needs of customers.
- To Have increase for kar
- To be active on ethics components
- To lessen faults
- To create synergy
- To raise the experience level of workers

The structures of organisations has been classified by "learning" issues as follow;

1. knowing organisations
2. understanding organisations
3. thinking organisations
4. learning organisations

By the technical issue, for the setablishment of learning organisation, Five discliplines are important topics:

- System thinking
- Personal Mastery
- Mental Models
- Shared Vision
- Team Learning

These topics are main body for learning organisations.

What is learning?

Learning cause a change of behavior that is persistent, measurable, and specified or allow an individual to formulate a new mental construct or revise a prior mental construct. The main characteristics of learnin are;

- complex
- transformational
- natural, and life-long
- multi-level
- fundamentally personal, yet also social
- active and interactive
- measurable
- greatly influenced by organizational factors, including leadership, culture and structures.

Levels of learning:

1. unconscious incapability
2. conscious incapability
3. conscious capability
4. unconscious capability
5. consciousness of unconscious capability

Learning Organizations

An organisation that learns, encourages learning among its people. It promotes exchange of information between employees hence creating a more knowledgable workforce. This produces a very flexible organisation where people will accept and adapt to new ideas and changes through a shared vision. [Karasch,]

2. MEASURING OF LEARNING ORGANISATION STRUCTURE

Measuring for structure of Learning organisations, these five main properties are necessary:

- Personal ability and individual,
- Intellectual Models
- Team work
- System Concept
- Vision
- Work and quality development.

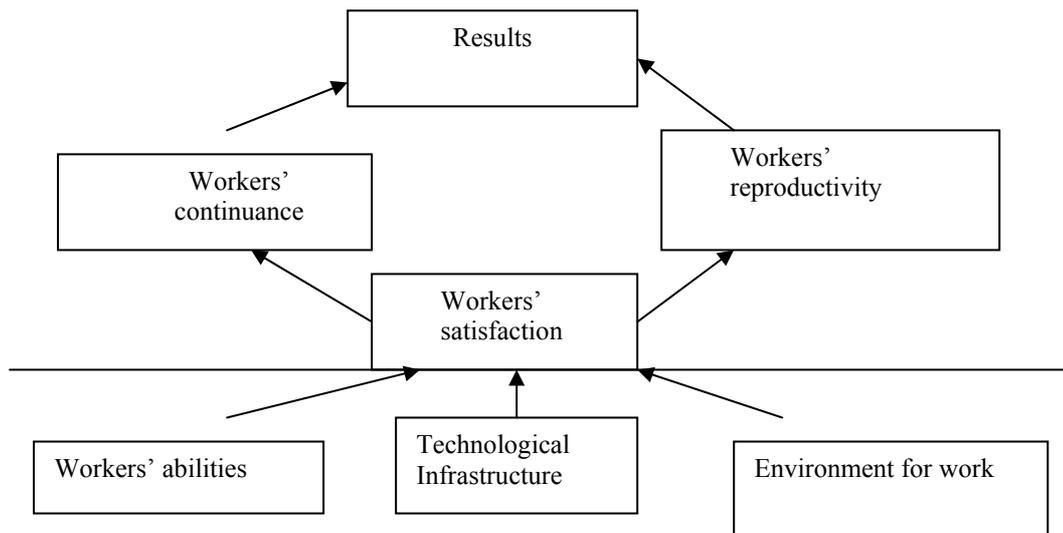
For improving of learning and substainablity of development, a measuring and estimation system that has focused on improving of personal ability at company must be developed. At this system, firstly saticfaction level of people at company have to be measured. If a worker has saticfaction for his work, measuring of his performance is possible.

2.1 Measuring of Learning:

Managers can prepare results for ability of people at company as a report. These reports can be a base for seasonal responsibility, estimation, feedbacks and learning. On the other hand these reports can be considered as a warning for lackness of measurement. Before measuring of workers' performance , indicators about learning and .development should be looked.

There are three indicators for learning and development:

- Workers' satisfaction
- Workers' continuance
- Workers' reproductivity



[Reference: Çam, 2002]

2.1.1. Workers' Satisfaction

The first indicator of learning and development is workers' satisfaction. Satisfaction of employees depends on morale of themselves and their ambition to work. A company's desire to gain the customer satisfaction exists however its employees satisfaction and high motivation.

The level of satisfaction in a firm can be measured by the following criterions;

- Attendance to decisions,
- Appreciation of accomplishment
- Possibility of accessing to information and knowledge to accomplish a specific project or work,
- Being creative and efficient support to use initiative ,
- Supporting level comes from employees,

- General satisfaction in over firm

The structure of the organization affects not only the productivity and economic efficiency but also the job satisfaction of the employee. The structure should be designed to encourage the willing participation of members of the organization and effective organizational performance. Personalities are important parts of the working of the organization, therefore the actual operation of the organization and success in meeting its objectives will depend upon the behavior of people who work within the pattern (the structure of the organization) and who give shape and personality to the framework. Thus, the operations of the organization will be influenced by the style of the personalities of members and the informal organization. Determining the policy of an organization is the main goal of the manager because people could modify the working of the formal organization in the way of developing a culture of value and satisfaction.

2.1.2 Workers' Continuance

To sustain the continuance of employee is an essential aim for companies throughout the past decades. Aim is long term investment for employee and determination of unexpectational resignings as a lack for entellectual capital. A bound personnel who work for a long time for own company can be used in main business such as correlated with company values, and important customers.

2.1.3 Workers' Reproductivity

Reproductivity of personnel can be acquired by the result of satisfaction and permanency of each personel. Performance Evolution system can be described as objective analyses and synthesis which investigate the employee that his talents fit or not for the work and the accomplishment in projects or business process. In other words, performance evolution is a systematic evolution of improvement talent and success of employee in his/her work.

3. ANALYSING OF GIS COMPANY – ALFABIM AS- IN POINT OF LEARNING ORGANISATION STRUCTURE

Alfabim is investigated in 5 aspects of learning organization structure. These aspects are;

- System thinking
- Personal Mastery
- Mental Models
- Shared Vision
- Team Learning

To analyse the firm structure a questionarre is prepared and this questionarre was appllied by every personnel of Alfabim. However the questions are less but the samples high quantitiy has compensated this difficulty. 300 questionnaires are applied for workers.

2 types of questionnaires have been applied. First paper has asked to managerial positions in Alfabim and the second questionnaire was given to all workers. In the managerial questionnaires managers assessed the workers. So a controlling mechanism was created in analyse.

3.1 System Thinking in Alfabim

By the questionnaires, some results had been got for system thinking. Grade levels had been defined for system thinking stage of organization. 1 point for least system thinking and 5 points for the most.

In the worker questionnaire , the purpose was betraying for system thinking. Two questions for manifesting of system thinking. These are ;

1. Which department have the department that you work effected to ? Over all have answered as correct and this shows that first level of system thinking is alive for the company.
2. Are the Instructions for work suitable for procedures? This questions shows if there are rules for system in the work processes. And answers were fuzzy for describing of situation. Already the company has a quality assurance system and there are rules for processes. Though the answers are affirmative, there is no additional explanation in answers.

On the other hand in the questionnaire for managers, Managers evaluated the personels' aspects of system thinking as medium-3,5 points-. An orientation training for employees should be beneficial and they should take a training about the firm's projects in a whole dimension.

The business process in alfabim's projects are not well planned. So workers are not very conscious about their main works. Also in another question both asked in two questionnaires;

3. Do you think the employee in Alfabim has founders syndrome? The replies for this question showed us that Alfabim operates primarily according to the personality of one of the members of the organization (usually the founder), rather than according to the mission (purpose) of the organization. This question in analyze has 4 points and this is a high point to comment.

This syndrome also shows us Alfabim can not optimize its activities to materialize its mission –whatever it has or not a mission- . A suitable cure for this problem is accomplishing a broader understanding of the structures and processes of an organization, including an appreciation for the importance of planning.

3.2 Personal Mastery

In personal mastery, the aim or what one is trying to achieve, is much further away in distance. It would take a lifetime to reach it, if one ever does. (Senge, 1990). The profile of workers are very unexercised because the turnover for workers is very high. The average of

employee work period in Alfabim is short to create a stable department and this turnover rate causes reduce in learning process of workers.

$$\text{Turnover rate for employee is} = \frac{\sum \text{work_time}}{\sum \text{different_employee}} = 6.8 \text{ month/employee}$$

In consideration of a GIS project's length as 1-2 years, such a that rate is critical to create a learning organization. So the company's managers have to be ware that this rate is showing a problem and this problem should be solved with by changing the employee policies. These policies may have significant changes in Alfabim.

Also in managers questionnaire, managers stated for their %76 of employees, they are not satisfied with the workers their own efforts to develop themselves.

Alfabim should create more flexible and comfort working considitions. Some trainings and self-lightening educations should beneficial for employee.

3.3. Mental Models

Managers answered mental model questions. Betraying of mental models , two questions had been decided as following ones;

Does related worker defend his own ideas for behalf or opposition of company? The point that had been resulted as 2 points by managers. Because of experiences ,worker doesn't realize the importance of statement to improve the becoming a system skills.

This skill can be improved by working as a team experience and by understanding of mentality of the firm.

3.4 Shared Vision and team working

Peter Senge's vision of a learning organization as a group of people who are continually enhancing their capabilities to create what they want to create has been deeply influential. We discuss the five disciplines he sees as central to learning organizations and some issues and questions concerning the theory and practice of learning organizations. (Singe,1980)

In the questionnaires , questions for vision and mission had been asked to not only workers but also managers. Question was sample. It was just " what is vision and mission of company?" and unfortunately so few people could write something and lots of them had written unrealistic things . The big reason of this stiation was the term of vision and mission hadn't been described by the management.

4. CONCLUSIONS

In this study a management approach named “Learning Organization” method has been investigated if it can be applied for a Geographical Information System organization. To analyse the organization’s structure 2 questionnaires (Appendix 1-2) have been prepared and applied for managerial department and all employees. Learning organisations thrive on change in changing environment. They do not be scared, know objectives and plan. GIS implementation has big necessity for planning of work flow processes. Especially data collection is the most important part of work chart, because it is the main body of application. Before implementation of GIS, planning is most important , that can be performed by becoming a learning organisation productively. Becoming a learning organisation forces the encourage experimentation. Usually experimentation is a big risk but GIS always needs to have risks for regarding project. It is a technological work and in the market organisations have rival companies. That is a technological race. Learning organisations provides facilitation learning from the surrounding enviroment. It finds internal and external sources of information. The one of main characteristic of learning organisation is team working. It facilitates learning from employees, encourage participation and experimentation , remove hierarchy. That can be considered as a university department for the GIS company. Learning organisation structure contains a proper selfishness and this means a clear goals and objectives, that is also a need for GIS.

REFERENCES

- Marquard, J. Michael, 1996 “Building the Learning Organizations”, New York, 1996
- Cam, Salim, 2002, “Rekabet Ustunlugu ve Ogrenen Organizasyon Yaratmak” (in Turkish), İstanbul
- David A., Garvin, “Building A Learning Organization” Harvard Business Review, July-August 1993
- Deb Stewart, Reinterpreting The Learning Organisation, Working Paper Series, 3/2001, Victoria School of Management
- Demir, N. “ An application for learning organisation and communication” (in Turkish), Bachelor’s Degree Thesis for Industrial Engineering, Yildiz Technical University, İstanbul, Turkey, 2003
- Karash, Richard, <http://www.see.ed.ac.uk>
- Larsen, Kai; 1996, “Learning Organizations”, <http://home.nycap.rr.com/klarsen/learnorg>
- Malhotra Yogesh, 1996, <http://www.brint.com/papers/orglrng.htm>
- Millet Bruce 1999, “Understanding Organizations: the Basis For Managing Change”, Australian Journal of Management & Organisational Behaviour, Volume 2, No. 1
- Senge, P., “Fifth Discipline” (in Turkish), Yapi Kredi Yayinlari, İstanbul, 1998
- Venters William, 2001 (rev.2002) Literature review for C-Sand: Knowledge Management, Literature review for C-Sand 19/02/2002 Volume 1

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Appendix (Questionnaires)

Questionnaire 1: For Managerial Positions

	1	2	3	4	5
1. Does worker have ability to perform new knowledge to applications?					
2. Does worker force to improve himself?					
3. Does worker have experience about work such as 1-2 years?					
4. Does worker follow instructions and prodecures?					
5. How is worker's working desire?					
6. Does related worker defend his own ideas for behalf or opposition of company ?					
7. Does worker finish work on time?					
8. Does worker know the work which part of project?					
9. What are the definitions of Vision and Mission of the Company?					

Questionnaire 2 : For all employees

	1	2	3	4	5
10. Which deparment have you effect the work you do?					
11. Are your knowledge and experience presence as suggession at company?					
12. How long have you been working for your current company?					
13. Does worker follow instructions and prodecures?					
14. Which one of the following statements are prior for you? (only choose one statement)					
i) Knowledge is source of power.					
ii) Knowledge increases when it is shared.					
15. What are the definitions of Vision and Mission of the Company?					